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Editor's Note:

Dear OMs,

on the brighter side this month is the great encouragement we have received from the Editor and staff of the "Short Wave Listener". From now on, a page of notes on BATO activities, plus constructional articles, photographs, etc, will appear in that magazine, and possibly also in the "Short Wave Magazine" too. You will all appreciate what this means in terms of publicity alone, but also it means that the necessity for CQ-TV (which was only started as a temporary measure) will diminish. In time, I hope it will be possible to reduce the mag to a news sheet. The circulation is now too large for the printing to be easy.

I realise that more of you probably take the "Magazine" than the "Listener", but as we are not actually transmitting yet, it seems reasonable that we should appear in the latter. I think all members will join me in thanking the "Listener" for its help.

As far as licences are concerned, it has been another negative month or so. No reply has been received from our own overtures, but the RSGB say they are "still negotiating". Apparently, questions are being asked in the House of Commons, which may be useful.

In the meantime, there appears to be nothing in the licence conditions, except the stipulation that "messages shall be in plain language", to prevent TV signals being transmitted as AM or FM, so long as no pulses are radiated. Thus, if the BBC's sync signals, picked up by an O-V-2 on 45 mc/s, are used at each end for sync purposes, then only the picture content need be transmitted. This method has been employed in the USA, and is quite satisfactory, although, of course, transmission is limited to TV hours - when many TXs are silent because of TVI. A ruling on this method of transmission is awaited with interest from the GPO.

In conclusion, may I ask you to send photos and articles for reproduction in either the "S.W.L" or CQ-TV to me. Photos are returned undamaged, and I should be grateful for any you may have of equipment and results, etc. Write in anyway, and let us hear what is going on.

73s to you all,

Michael Barlow, G3OVO.

## 'THIS MONTH'S SHORCS.....'

HINT from Fred Rose, G3ELVc put a 15 pF condenser in series with the CRO leads when lining up the Parkin freq. divider.

CHANGE of address: H.O. Wille is now at "Seletar", 47 Hall Ave, Rushden Northants.

REMEMBER the copyright laws if you are using commercial film in your telecine gear.

AVAILABLE: Two 300' lengths of 16mm silent film...from Vic Page, 32 Faversham Rd, Salisbury, Wilts. Also loose (unspooled) 35mm film..very old! '50VO has 400' of 16mm sound, and a few feet of 8mm silent.

FOR stills, try your local boot shop, and get one of the ads for Goodyear stick-on soles; they're really good - ask Ivan Howard!

DID you see that single tube MAGNETIC time base in May '70 Electronic Engineering? A crafty transistron.

WANTED: gen on conversion of CW67 Klystron unit to 13cm amateur band, by G3CVO.

IS anyone a publisher or printer of technical books, please? pity....

CONGRATULATIONS to FFMH, our French representative....Bernard was the Congress Secretary at the recent I.A.R.U conference in Paris.

CONGRATULATIONS to PA6ZX... Hendrick is now Hon. Treas. of V.E.R.O.N.

PLEASE take newspaper reports of the activities of 'GVO, in or out of "saloon bars near Victoria". with some reserve!

KEEP looking on 3755 kc/s on the hours on Sat. evenings especially AFTER TV hours!

JILL the chap with the photos of PA6ZX's TV camera ex-Circular Letter, please return same to me.

NO!! Algernon, that is NOT the definition of a Frame Interlock!

VIDICON gen was in the June "Short Wave Listener". RCA London have no information on it! Another reason for reading the "S.W.L."!

PHOTOS for reproduction in the "S.W.L." should be g Plate for preference, but roll them in anyway. Remember they like articles double spaced typed, with wide margins, single sides of foolscap paper.

NEXT edition about middle of August; have a good holiday, com.

HAMS - please let me know which bands you operate on

AND one more: M.M.Fluck, 164 The Mall, Kenton, Harrow, Middlesex

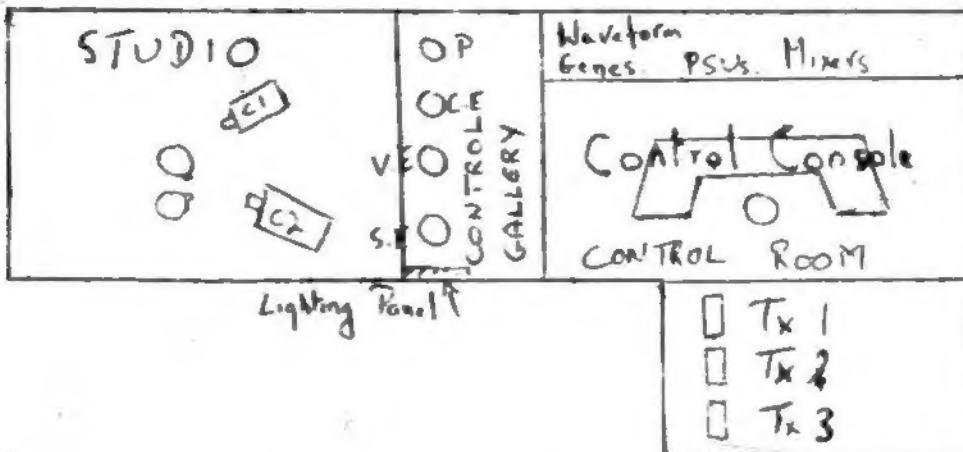


## PRODUCTION LINE TESTING - WITH A COMPLETE TV TRANSMITTER.

BY M.M.FACK, late Messrs. Pye Radio, Cambridge.

When television transmission was resumed at the end of the war, it was foreseen that the demand for receivers would result in a considerable increase in production compared with 1939.

Among the problems presented by this expansion was that of final testing. Whilst electronically produced test bars are suitable for checking linearity, they give no idea of definition. Therefore it was decided to construct a complete TV station, which also has the advantage of being a useful vehicle for showing in action the company's transmitting equipment as well. This station provides, over closed circuits, an RF waveform exactly similar to the BBC's in every way.



Layout of Studio and Transmitting Equipment.

The studio was lit by spots and floods mounted on girders under the ceiling, and also on portable dollies that could be moved during transmission. Cameras varied considerably as developments took place, and were controlled from the control gallery overlooking the studio. Here the vision engineer, sound engineer, chief engineer and producer carried out their own particular work. In this gallery were the vision mixers, only two camera channels being used; this was quite sufficient for a studio of this description.

From the control gallery, the pictures went to the control console in the main control room. Here the pictures to be transmitted to the production line were selected from either (1) the camera picture from the studio, (2) A.P. picture from a receiver, or (3) a choice of two test patterns from monoscopes. The waveform generators, mixers, power supplies, and Cathode Followers (for the line outputs) were rack mounted in this room, all tubes being mounted horizontally for ease of replacement.

The Waveform Generator consisted of a 10125 cycle M.O (locked to the mains), with frequency dividers for the other pulses. Sawtooth and pulse equipmt. was quite straightforward. All pulse channels were cathode followed so that output could be taken to the development lab, if required.

Video and pulses were mixed, and then supplied as modulation to one of three transmitters, two on 45 mc/s and one on 61.75 mc/s. About 15 watts of R.F. was

available from two 80% in the PA. A CO on 7.5 mc/s was multiplied up and an EF55 was employed as a driver.

In a similar manner, a choice of sound programme was available - BBC, BBC Light, Gram or Studio. 50% mod to a transmitter roughly identical to the vision tx was used.

The tx outputs were taken via 75 ohm coax to the assembly line. All act were carefully screened to prevent TVI trouble in the town (!). The equipment was very reliable in operation, running eight hours a day for four years during the time our correspondent was there.

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### WHAT THE OTHER BLOKE IS DOING.....Continued from Page Eight.

Fred Rose G3LV has now finished his Preamp and made progress with his Pulser. He finds it necessary to use a stabilised PSU, and was rather surprised, on enquiring from his nearest Power station, that "the mains frequency doesn't often fall below 47.5 c/s"!!! He suggests that interlacing will be tricky if the mains are going to vary by 5%. Fred is toying with the idea of a Mazda projection unit...@ £22-10-0!

E.H.Thomas of 60, Salterne Rd, Parkstone, Dorset has been experimenting with 931As in IFCs. He points out that the Science Museum will do photostat copies of articles in magazines at about 5/- per article of up to 12 pages. Any of you chaps who want copies of some gen article had better write in to the Museum.

Hendrick de Waard PA5JY (see below) writes in to say that a Fair is being held at Winschoten, near Groningen, and the TV Tx will again be in operation. Any members in Holland are invited to attend; June 19th-25th are the dates.

Ivan Howard G2DUS is going ahead with the interlace equipment, plus a second camera unit and all the vision mixing equipment and monitors. We hope for more gen later.

Let me have your news before you go on holiday chaps. Them have a good time!

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### VISIT OF WELL-KNOWN DUTCH HAM TO LONDON: REPORTS RESULTS "EXCELLENT".

H. de Waard, over here to buy radio equipment for Groningen University, took the opportunity of meeting some of the members of the BATE, and seeing the equipment in use. On his second day here, a party consisting of PA5ZX, G3OVO, G3GBO and Tony Sale went by car to Stotfold to see G2DUS. Ivan demonstrated his Ike camera, and we were very pleased to hear that the results were, if anything, better than those obtained in Winschoten with more complicated gear! Time was unfortunately rather short, but much advice was swapped, and many very crafty wangles admitted! 'ZX echoed our feelings when he stated what a pity it is that other British hams are in no position to compare notes.

Hendrick visited 355E3's QTH, and almost every surplus radio shop in town. Afterwards he said that he thought the work he had seen done on IFCs was very creditable, and in view of the official attitude, he thought the amateur TV setup was very good indeed. To the hasty exchanging of QSLs we said goodbye to him at Victoria, from where he went on to Paris to put forward a case for ham TV at the IARU conference. Fb, on, as hope evnagn soon.

CONVERSION OF SURPLUS RADAR JAMMING UNIT TO A COMPLETE TELECINE EQUIPMENT

By Tony Sale.

There are on the surplus market a series of surplus radar jamming units, all of which have identical modulator units, but varying in the RF stages. These units are numbered AQ3, 4, etc., but many of the units have no identification plates on them. They are not common pieces of equipment, but are only £2-10-0 when available.

The modulator section unmodified consists of a 931A cell used as a noise generator, with a small 6v bulb strapped close up to it, and a preamplifier, which only responds between 500 kc/s and 3 mc/s, employing a 6AC7, 6AC7, 6AG7. The o/p is fed to two 807s in parallel, the whole unit being on a sub-chassis about 18" long and 3" square. The RF section varies; two types seen have p-p 388s on about 700 mc/s, and p-p 8012s on 420 mc/s! A few of the latter type were available in Upper St Martins Lane, and may be still..... In any case, the RF section is an SEO, which is tunable from the front panel, grid modulated by the 807s. Since jamming is the object, combined FM and AM is all the more use, and it is most inadvisable to use the equipment as it stands!

The conversion of the modulator is very quick, involving three condensers and a few resistors only. Reference to the cct diagram will show the alterations required - chiefly in the interstage couplings. The anode coils are removed and replaced by resistors. The coupling condensers and grid leaks are altered as shown, and HT decoupling is inserted. It must be emphasised that this circuit is still experimental, and the response has not been worked out. It may be advisable, if 400 line work is envisaged, to retain some inductance in the anode ccts, but the original coils are too small. Altering the RC coupling values will alter the frequency response, of course, and the writer would like to know of results obtained with different values.

The PEC is rotated through 90 degrees, and the noise lamp is removed. A new PEC cover must be made, and should be coated with a matt paint on the inside. An extra phase reversing stage/cathode follower can be incorporated after the 6AG7, but make sure the Neg/Pos switch is a low-loss job. To make room for it, the RFCs associated with the 807s are removed; they are not required anyway.

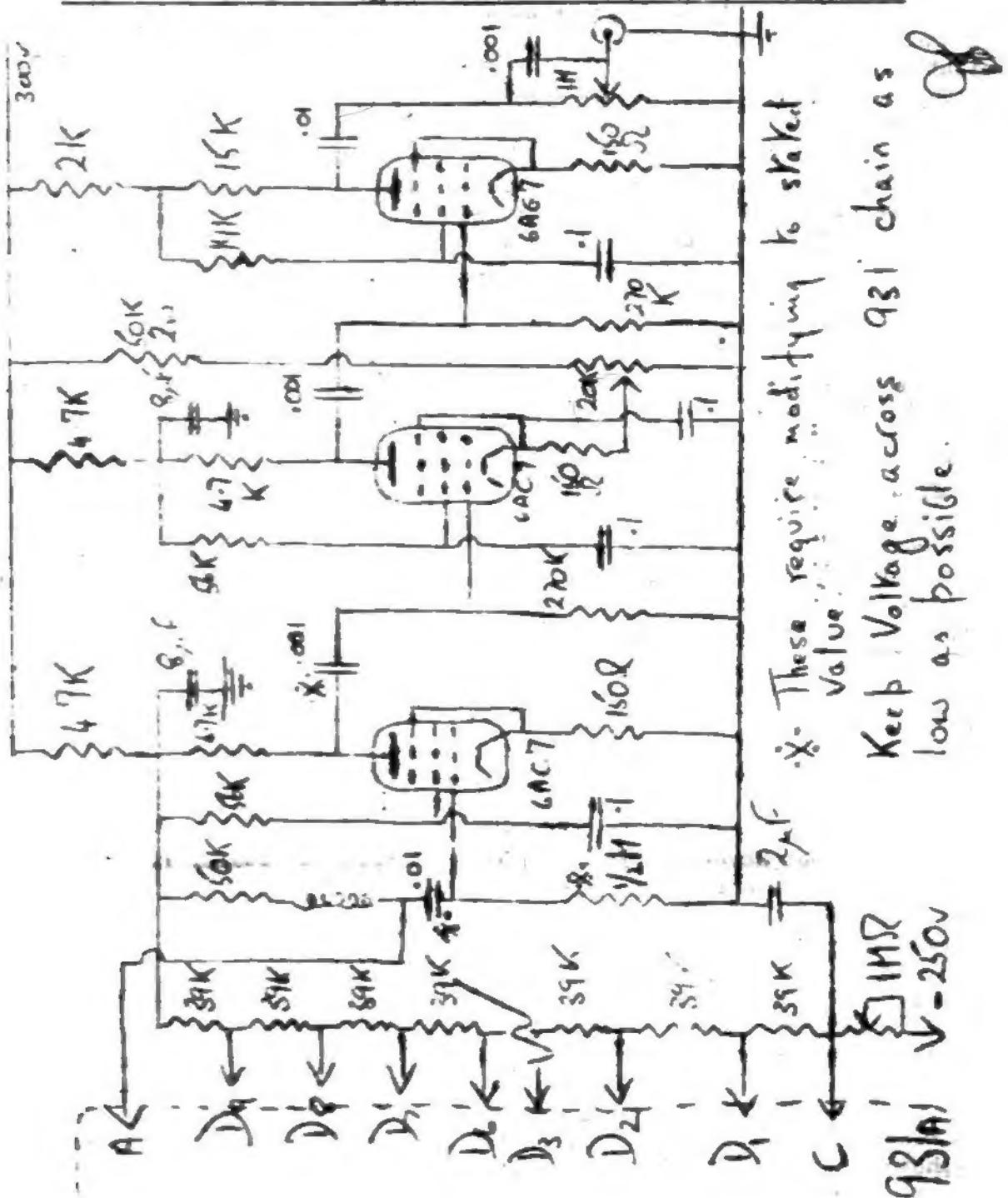
Decoupling condensers can be mounted on the walls of the interstage screens, and controls brought out through the sides. 500 volts of HT are required, but the 931A should not have more than 500 volts across the chain. If the scan is sufficiently bright, the noise level can be still further reduced by using 350 v on the cell. With 500v, the overall sig-noise ratio at the anode of the 6AG7 is 6:1 as measured on a CRT, and it should be quite possible to improve on this.

The 1M potentiometer on the output is for matching into the load, and can be preset, as may the 1M PEC pot. Incidentally, the PEC chain can be left as it is, since all connections are brought out on tags under the chassis.

Data on the RF section conversion may be given later; for the time being, however, anyone who sees one of these units is advised to snap it up, but quickly! The complete unit is about the size of a radar indicator unit, and is finished in black crackle, beautifully, in the same style as the APW4 units. It is hoped that photos of this unit may appear in the "Short Wave Listener".

(The cct diagram is over the page, cms. Look lively, will you??).

CIRCUIT OF MODIFIED AQ3/4 RADAR JAMMER MODULATOR UNIT FOR TV



SOME USEFUL REFERENCES FOR TV TRANSMITTERS, by Fred Rose, G3BLV, and others.

Time Base and Pulse Circuits:

Interlacing Problems	Cocking	Wireless World	April '47.
Monoscope Signal Generator	Hibberd	Electronic Eng.	June, July,
Blocking Oscillators	Cocking	Wireless World	& August '46.
Pulse circuits	*	.. ..	June '49.
Cathode Coupled Pulse Squarer, Sowerby	.	.. ..	May '46.
Pulse shaping Circuits.	.	Radio Craft.	Aug '48.
Pulse stretcher ccts.	Sowerby	Wireless World	April '46.
Cathode coupled Flip-flop	Thomasson	Journ.Brit.I.R.E	April '49.
			Jan '50.

CRTs:

Application of Photography to CRTs.	Berkely&Feldt	Electronic Eng.	April '49.
Screen materials of CRTs	.	Journ. I.E.E.	Dec. '45.
Ex-W.D CRT data	Thomasson	Wireless World	Dec '47, Aug '48.
CRT screen materials	Garlick	Electronic Eng.	Aug. '49.
RCA phototubes bulletin	*	RCA Ltd.	
Phototubes, CRTs and Special tubes.		RCA Ltd.	

Power Supplies:

2kV from 350v transformer.	Setten	Wireless World	June '49.
931A Power supply	Marshall	Electronic Eng.	March '49.
An RF EHT unit	*	Practical Wireless	Sept '49.
Stabilising EHT supplies	Sowerby	Wireless World	April '49.

Miscellaneous and further reading:

Ultrafax high speed facsimile. Bond	Journ.Brit.I.R.E.	April '49.
Wide band amplifiers (100c/s-20mc/s)	Electronic Eng	Sept. '49.
Principles of TV engineering. Pink	pub. McGraw-Hill.	
TV programming and production. Hubbell	pub. Murray Hill Books.	

If you know of an article that you would recommend, please let me know.  
The available literature is very short - unless I can find a publisher!

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CORRECTION: Thanks to Z96GI - in the ect of a SIMPLE INTERLACE GENERATOR, there should be a lead from the grid of V3, via a 20 pF and 100K in series, to the anode of V3, the Gate valve.

Also - in the 931A preamp in edition 2, the 12 and 15 condensers in the anode correction ccts (across the RF choke pies) are pF NOT mFd. Sri, cms.

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DOES ANYONE HAVE a rotary duplicator upon which they would turn out the mag. if I provide cut stencils and paper? No paging binding or crimping needed. You print it, and I'll put the covers on. Approx 80 copies, eight pages each. Offers to your perespiring editor, who is short of time! Would consider buying machine or swap for flatbed type, suitable cash adjustment.

"WHAT THE OTHER BLOKE

IS DOING....."

Lot of reports, this time. This, one.

Sid Hannaford is now the owner of an ex-WD projection unit...2 $\frac{1}{2}$ kV and all. What's the type number, oh? His rx is going fb on S.C at 90 miles.

Harold Jones G5ZT reports fair reception of A.P and better from S.C in Plymouth. He is concentrating on the rx side for the time being.

Newcomer Norman Rutherford, of 5, Main St, Carlton Notts, and pal have been getting 30 line pictures over, using an old Baird disc scanner, and a Loran 'scope for rx. A 931A in the camera worked fine on a 100 watt lamp at 3 feet.... Norman is now trying some high definition gear.

Jimmy Hedges, G3DBV has got his local club interested, so we are hoping for great things....

Ray Hills has been busy in the RAF, and has not done much TV work. He reports his phone number as GRIMSDIKE (London) 1834. He is due for demob shortly, and then....! D.Hudspith reports that he has progressed from a 2 $\frac{1}{2}$ " Oscilloscope tube in his rx, to a 15" mgtc, plus extension unit AND projection unit. He is now trying a telecine job using said projection unit.

Wally Oliver is now the Hon. Sec. of the Radio Engineers' Society of Lancaster & Morecambe. Congratulations, oo. Wally is busy writing an article on VAs, and says he will be glad to meet any members in Morecambe on holiday..or Blackpool...

OT Jack Porter of 30/31 College St, Worcester (tel. Wors 2442) has returned to TV after 20 years! His rig then was a Baird 30 line mirror-drum job, Kerr calls and all! Jack has built himself a 15" rx, and is now hoping to get down to the camera side. Another chap wanting to have another go is Grant Dixon of 23, Wye St, Ross on Wye. He had a 30 line disc job in 1933, but then changed over to being a blue blooded SVL. He has made several rx's, and is now working on a mechanical scanner using a 931A. He thinks this will not be so easy, and is going to be electronic! Errol Erasmus ZS6GX writes from S.Africa that he is gradually getting the chaps there round to TV. He says that to work on 145 mc/s with TV they just have to ask! But there are only about six rx's in S.A...in Jo'burg, Capetown and Durban. ZS6BG hopes to be in on the ham and A.P TV soon, with ZS6GX. These two are in the same town as 'GK, so we should hear something soon. ZS5PA in Durban has a 5527 and is getting fb results (any photos please?), but has no rx's and is landline-bound! Old Errol is rather worried by the lack of good 145 mc/s rx's in S.A which is holding up development in all directions. Lack of literature (except a few copies of "Inexpensive Television") is also a trouble, so would anyone who has spare copies of anything with TV in it please pass them on to ZS6GX for distribution.

Pete Parkin and Tony Sale both suggest the use of very LONG persistence CRTs in IFC since these usually have a fast blue trace and a long brown trace that could be removed by filters. Anyone know any suitable types? Tony has built another IFC using a radar jamming unit (see article). He is now in the Radar lab in the RAF, so....

Ian Macwhirter G5ETI is growing bulbs in his old CRTs. (Well, you told me so...).

Tony Gilbey is rebuilding his Rx, and is also actively SVL-ing on 2metres. He gets trouble from a Police VHF Tx about 500 yards away. ("Terrible!").

S.J.Davies has also been rebuilding, in between working DX on 7 mc/s with 0.5 watt!



(Continued at foot of Page Four).